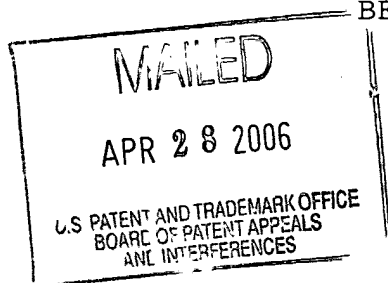


The opinion in support of the decision being entered today was not written for publication in a law journal and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE



BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RAINER KIEFER

Appeal No. 2005-2134
Application No. 10/069,636

ON BRIEF

Before GARRIS, KRATZ and FRANKLIN, Administrative Patent Judges.
FRANKLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 20 through 39. A copy of each of these claims is set forth in the attached appendix.

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The examiner relies upon the following references as evidence of unpatentability:

Szwargulski	U.S. 3,520,330	Jul. 14, 1970
Platt	U.S. 4,142,652	Mar. 6, 1979
Pasternack	U.S. 4,611,628	Sep. 16, 1986
George	U.S. 5,305,794	Apr. 26, 1994
Mays*	DE 24 06 313	Aug. 28, 1975

(German Published Patent)

*We use the English translation of Mays.

Claims 20 through 25 and 34 through 36 stand rejected under 35 U.S.C. § 103 as being obvious over George or Pasternack.

Claims 20 through 23 and 26 through 30 stand rejected under 35 U.S.C. § 103 as being obvious over Platt.

Claims 35 and 39 stand rejected under 35 U.S.C. § 103 as being obvious over Mays.

Claims 37 through 39 stand rejected under 35 U.S.C. § 103 as being obvious over Pasternack.

Claims 31 through 33 stand rejected under 35 U.S.C. § 103 as being obvious over Pasternack in view of Szwargulski.

With regard to the claims under consideration in this appeal, to the extent that any one claim is separately argued with a reasonable degree of specificity regarding its patentability, we will consider such claim. See 37 CFR § 41.37(c)(1)(vii)(2004).

We use the Substitute Appeal Brief filed by Appellant on October 14, 2004.

OPINION

I. 35 U.S.C § 103 rejection of claims 20 through 25 and 34 through 36 as being obvious over George or Pasternack

We consider claims 20, 21, 22, 23, 35, and 36 in this rejection.¹

Upon review of the Examiner's rejection and Appellant's arguments, we observe that the critical issue before us is whether the applied art teaches or suggests the aspect of claim 1 regarding a flow resistance that causes a pressure drop of at least 1 bar.

The Examiner acknowledges that the references do not indicate the amount of resistance as claimed, but concludes that it would have been obvious to size the restriction such that, with a particular fluid, a desired pressure drop occurs at a desired flow rate.

Beginning on page 5 of the Brief, Appellant states "assuming that one skilled in the art could design such a flow resistance to cause a pressure drop of 1 bar, if there was motivation to do so, **the cited references provide no such motivation.**" Beginning on page 3 of the Reply Brief, Appellant reiterates that there must be some suggestion in the applied art

¹On pages 3 through 4 of this Brief, appellant indicates that the claims do not stand or fall together and states that "the subclaims further restrict the independent claims with patentably significant limitations." Appellant then goes on to recite recitations from different claims. As indicated, supra, to the extent that any one claim is separately argued with a reasonable degree of specificity regarding its patentability, we will consider such claim. In the instant rejection, we observe that Appellant argues that all the claims are restricted to a discharge valve for a CO₂ pressure vessel having a flow resistance, independent of the valve opening, wherein the flow resistance causes a pressure drop of at least 1 bar at a temperature of 20°C in a gas flow rate of 0.5 g/s. Brief, pages 4, 6, and 7. Therefore, we consider claims 20, 21, 22, 23, 35, and 36 in this rejection.

for making the selection of a pressure drop of at least 1 bar, and Appellant argues that there is no such suggestion. Appellant argues that the restrictor size provides the unobvious result of creating a pressure drop of at least 1 bar at a flow of 0.5 g/s of CO₂ at a temperature of 20°C in series with a valve, which as discussed in the specification, prevents escape of liquid CO₂ through an open or broken valve. Reply brief, page 3.

In response, beginning on page 5 of the Answer, the Examiner points out that Appellant does not dispute that George and Pasternack each teaches restrictors. The Examiner points out that the only difference between Appellant's claims and the applied art is possibly the size of the restriction. The Examiner refers to column 3, lines 30 through 35 of George, where George discloses that the risk of injury to the operator is reduced because the rate of gas flow is restricted when valve 64 is sheared off from first body portion 93, whereby orifices 96a and 96b allow a restricted flow of gas to exit cylinder 10. See Figure 3 and see also column 3, lines 28 through 35 of George. The Examiner reasons that based upon this disclosure, "it is seen that the restrictor likely meets the recited results." Answer, page 5. Ultimately, the Examiner states that "it does not require inventive effort to make a restrictor that causes a desired pressure drop - one simply makes the hole small enough." Answer, page 5. The Examiner states "[f]urthermore, the claims are not directed to a method of preventing passage of liquid carbon dioxide, they simply recite a desired flow rate at a given pressure and temperature." Answer, pages 5-6.

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We agree with the Examiner's conclusion of obviousness for the following reasons.

We note that for a *prima facie* case of obviousness to be established, the reference need not recognize the problem solved by the Appellants. See *In re Kemps*, 97 F.3d 1427, 1430, 40 USPQ2d 1309, 1311 (Fed. Cir. 1996); *In re Beattie*, 974 F.2d 1309, 1312, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992); *In re Dillon*, 919 F.2d 688, 693, 16 USPQ2d 1897, 1901 (Fed. Cir. 1990) (*en banc*), *cert. denied*, 500 U.S. 904 (1991); *In re Lintner*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).

In the instant case, Appellant argues that the at least 1 bar pressure drop is for the purpose of preventing liquid CO₂ from escaping (this purpose is not claimed, as pointed out by the Examiner, *supra*). George provides for a pressure drop for the purpose of safety (as pointed out by the Examiner, discussed, *supra*). Pasternak provides for a pressure drop for the purpose of causing a slowed flow of gas which is free of impact to pass through the sealing valve to the equipment. See column 3, lines 9-28 of Pasternack.

Although George and Pasternack do not indicate the specific values of the pressure drop used to achieve the above-mentioned purposes, we agree with the Examiner's logic that it would have been obvious to provide pressure drop values which satisfy the purposes of George and Pasternack and which thereby meet appellant's claimed pressure drop values (of claims 1 and 35, as well as of dependent claims 21, 22, and 23, and 36). One skilled in the art would have envisioned use of a high pressure cylinder, wherein a pressure drop of 10 bars is reasonably conceivable. The pressure values claimed by appellant are broad

(claims 1 and 35), and not very high (as high as 10 bars (claim 23), and as low (a "maximum of 50" which includes very low values (claim 22)). An adequate pressure drop to achieve the stated purpose of George and Pasternack would at least overlap appellant's claimed values. With regard to the aspect of the claims regarding temperature and gas flow rate, such is a standard of measure of the gas at issue, CO₂, and serves only to define the flow resistance capability of the claimed values.

In view of the above, we therefore affirm that the 35 U.S.C. § 103 rejection of claims 20 through 25 and 34 through 36 as being obvious over George or Pasternack.

II. 35 U.S.C. § 103 rejection of claims 20 through 23 and 26 through 30 as being obvious Platt

We consider claim 20 in this rejection.

On page 7 of the Brief, Appellant argues that Platt also does not suggest a restriction path providing a pressure drop of at least 1 bar. Appellant also states that Platt specifically indicates that liquid passes through the valve and therefore appellant argues that Platt cannot possibly provide the required pressure drop of the present invention. We are not convinced by this argument, for the same reasons discussed, *supra*. Platt teaches use of a restrictor 24 "to prevent immediate passage of any additional liquid". See column 4, lines 16-22. Thus, when the valve mechanism is operated, only a metered quantity is effectively discharged. See column 4, lines 22-24. Again, an adequate pressure drop to achieve the stated purpose of Platt would at least overlap Appellant's claimed values, and we refer to our discussion, *supra*, in this regard.

Accordingly, we affirm the 35 U.S.C. § 103 rejection of claims 20 through 23 and 26 through 30 as being obvious over Platt.

III. 35 U.S.C. § 103 rejection of claims 35 and 39 as being obvious over Mays

Appellant simply repeats the arguments, discussed, *supra*, that the applied reference does not suggest a pressure drop of at least 1 bar and a flow passage independently of the valve opening as required by the present claims. We are not convinced by this argument for the reasons, stated *supra*. We add that Mays uses a high pressure tank, and a stated purpose of Mays is the use of the high pressure tank without endangering the user. See page 4, first full paragraph of the English translation of Mays. Again, an adequate pressure drop to achieve the stated purpose of Mays would at least overlap Appellant's claimed values.

We therefore affirm the 35 U.S.C. § 103 rejection of claims 35 and 39 as being obvious over Mays.

IV. 35 U.S.C. § 103 rejection of claims 37 through 39 as being obvious over Pasternack

On page 8 of the Brief, Appellant argues that these claims depend upon claim 35 and are therefore unobvious for the same reasons previously given.

For the reasons stated above, we are not convinced by such arguments. Accordingly, we also affirm the rejection of claims 37 through 39 under 35 U.S.C. § 103 as being obvious over Pasternack.

V. 35 U.S.C. § 103 rejection of claims 31 through 33 as being obvious over Pasternack in view of Szwargulski

Beginning on page 8 of the Brief, Appellant argues that neither Pasternack nor Szwargulski discloses or suggests structure for creating a pressure drop of at least 1 bar. Pasternack teaches that restrictor (item no. 27 shown on Figure 2) is in series with external valve 6. The examiner relies upon Szwargulski for use of a sintered check valve 14 for the purpose of allowing some fluid to pass when the valve is closed. On page 8 of the Brief, Appellant argues that Szwargulski does not cure the defects of Pasternack. However, for the reasons discussed, supra, we have determined that Pasternack is not deficient as asserted by Appellants.

In view of the above, we accordingly affirm the 35 U.S.C. § 103 rejection of claims 31 through 33 as being obvious over Pasternack in view of Szwargulski.

VI. CONCLUSION

Each of the rejections is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv) (effective Sep. 13, 2004; 69 Fed. Reg. 49960 (Aug. 12, 2004); 1286 Off. Gaz. Pat. Office 21 (Sep. 7, 2004)).

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AFFIRMED

BRADLEY R. GARRIS
Administrative Patent Judge

BOARD OF PATENT
APPEALS AND
INTERFERENCES

PETER F. KRATZ
Administrative Patent Judge

Beverly A. Franklin
BEVERLY A. FRANKLIN
Administrative Patent Judge

BAF:clm

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APPENDIX

20. A discharge valve for CO₂ pressure cylinders, comprising a flow passage (8) for CO₂ gas, a valve element (10) which is actuatable from the exterior and which can assume various positions and which in at least one of said positions closes the flow passage and in at least one other of its positions opens the flow passage through a valve opening, and connecting means for fixedly and sealingly connecting the discharge valve to a CO₂ pressure cylinder, wherein a flow resistance is provided in the flow passage (8), which flow resistance is independent of the valve opening and wherein the flow resistance is such that at a temperature of 20°C and a CO₂ gas flow rate of 0.5 g/s it causes a pressure drop of at least 1 bar.

21. A discharge valve as set forth in Claim 20 wherein the pressure drop is more than 5 bars.

22. A discharge valve as set forth in Claim 21 wherein the pressure drop is a maximum of 50 bars.

23. A discharge valve as set forth in Claim 22 wherein the pressure drop is between 10 and 30 bars.

24. A discharge valve as set forth in Claim 20 wherein a check valve is provided that is independent of the discharge valve, said check valve, in an intake direction to fill a cylinder, opening a by-pass, by-passing the flow resistance and closing the by-pass in a discharge flow direction out of the cylinder.

25. A discharge valve as set forth in Claim 24 wherein the check valve is resiliently biased in a closed position.

26. A discharge valve as set forth in Claim 20 wherein the flow resistance is a sintered body or a pressure-resistant diaphragm.

27. A discharge valve as set forth in Claim 26 wherein the flow resistance at least partially comprises plastic material, ceramic or metal.

28. A discharge valve as set forth in Claim 26 in which the flow resistance comprises a sintered body having an average pore size in the range of between 1 and 10 μm .

29. A discharge valve as set forth in Claim 28 wherein the sintered body has a porosity of between 10 and 80%.

30. A discharge valve as set forth in Claim 28 wherein the sintered body has a porosity of between 10 and 40%.

31. A discharge valve as set forth in Claim 26 wherein the flow resistance is in the form of a valve body movably accommodated in a valve seat.

32. A discharge valve as set forth in Claim 31 wherein the flow resistance is biased in the CO₂ discharge flow direction.

33. A discharge valve as set forth in Claim 31 wherein the flow resistance has a substantially tapered surface for reception in the valve seat.

34. A discharge valve as set forth in Claim 20 wherein the valve element (10) is arranged on a side of the discharge valve which is remote from the CO₂ pressure cylinder, and wherein the

flow resistance is arranged on a side of the discharge valve, which is towards the CO₂ pressure cylinder.

35. An attachment portion for attachment to a discharge valve for CO₂ pressure cylinders, wherein the attachment portion can be fixedly and sealingly connected to the discharge valve and has a flow resistance therein for causing a pressure drop of at least 1 bar from the pressure cylinder independently of the discharge valve.

36. The attachment portion of Claim 35 wherein the pressure drop is from 5 to 50 bars.

37. An attachment portion for a discharge valve as set forth in Claim 36 wherein the attachment portion has a male screwthread which corresponds to a female screwthread at an end of the discharge valve towards the CO₂ pressure cylinder.

38. An attachment portion as set forth in Claim 36 wherein a maximum outside diameter of the attachment portion is smaller than an inside diameter of a screwthread of the pressure cylinder.

39. An attachment portion as set forth in Claim 35 wherein on a side remote from the discharge valve the attachment portion has a female screwthread whose diameter and pitch correspond to a female screwthread at an end of the discharge valve body remote from the discharge valve.